No. 8400087

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Nebraska and ARS-USDA

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, (THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,* TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS REQUIRED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

(*Waived, except that this waiver shall not apply to breeder seed, foundation seed, labeling requirements, and blending limitations.)

WHEAT

'Colt'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 31st day of December in the year of our Lord one thousand nine hundred and eighty-six.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
NE78696	Colt	PV NUMBER 8400087
2. KIND NAME: Hard Red Winter Wheat	3. GENUS AND SPECIES NAME: Triticum aestivum L.	FILING DATE 3/21/84 / TIME 2:30 XXX A.M. P.M.
4. FAMILY NAME (BOTANICAL): Gramineae	5. DATE OF DETERMINATION: July 1978	FEE RECEIVED $ 1,800 / $ 200.00 / DATE 3/21/84 November 19, 1986

6. NAME OF APPLICANT(S)	7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)	8. TELEPHONE AREA CODE AND NUMBER
Board of Regents, Univ. of Nebraska USDA/Agricultural Research Service	Lincoln, NE 68508 Washington, DC 20250	402/472-7211 202/447-3656

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*)	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation and U.S. Government Agency	Nebraska and Washington, DC	

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:

Dr. I. T. Omtvedt, Dean & Director
Nebraska Agric. Exp. Stn., Univ. of Nebraska
Lincoln, NE 68583

Dr. T. B. Kinney, Jr., Administrator
USDA/ARS, 302-A, Administration Bldg.
Washington, DC 20250

13. **CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:**

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.
- X E. Statement of Applicant's Ownership

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
[X] YES [ ] NO	[X] FOUNDATION [X] REGISTERED [X] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

FOR THE BOARD OF REGENTS– UNIVERSITY OF NEBRASKA

February 17, 1984
(DATE)

(SIGNATURE OF APPLICANT)
John W. Goebel, Vice Chancellor for Business & Finance

MAR 15 1984
(DATE)

T. B. Kinney
T. B. KINNEY, JR.
Administrator, ARS
(SIGNATURE OF APPLICANT)

(3/9/15 04)

FORM GR-470 (1-78)

EXHIBIT A

8400087

Origin and Breeding History of Colt

Pedigree: Agate Sib (NE69441)//391-56-D8//Kaw (Tx65A1503-1)

Date of Cross: Cross 72752, 1972

Place: Department of Agronomy, Nebraska Agricultural Experiment Station, Lincoln, Nebraska.

Breeding System: Mass-pedigree

The breeding history of Colt is summarized in Table 1. The decision to release NE78696 under the name COLT was made by the Nebraska Agricultural Experiment Station on January 20, 1983. Public release of information on Colt as a cultivar occurred on June 15, 1983*. The release was cooperative with the North Central Region, Agricultural Research Service, U.S. Department of Agriculture.

Breeder seed (about 20 bushels) was seeded in the fall of 1982 for production of foundation seed. In 1983, the Nebraska Foundation Seed Division produced 975 bushels of Colt. Of this, 865 bushels were allocated to Nebraska certified seed growers for the production of registered seed in 1984. The remaining 110 bushels were retained for further seed increase in 1984 and, also, allocated to the Kansas and South Dakota Agricultural Experiment Stations.

Tall plants present in a amount considerably less than 1 percent.

* Release statements attached.

Table 1. Breeding history of Colt hard red winter wheat.

Year	Generation	Nursery	Disposition
1972	F_0	Cross 72752.	To field and greenhouse for F_1 seed production.
1973	F_1	Field and greenhouse.	Advanced to F_2 bulk-hybrid nursery.
1974	F_2	Bulk-hybrid nursery, Mead, NE.	Advanced to F_3 bulk-hybrid nursery.
1975	F_3	Bulk-hybrid nursery, Mead, NE.	Heads selected and advanced to head-row nursery.
1976	F_4	Head-row nursery.	Rows selected and advanced to preliminary observation nursery.
1977	F_5	Observation nursery.	Line selected and advanced to observation nursery at multiple stations.
1978	F_6	Multiple-station observation nursery.	Plot 696 recognized as having merit. Assigned NE No. 78696 and advanced to Nebraska Triplicate Yield Nursery.
1979	F_7	Nebraska Triplicate Yield Nursery (all locations).	Advanced to Nebraska Intrastate Yield Nursery.
1980	F_8	Nebraska Intrastate Yield Nursery (all locations).	Continued in Nebraska Intrastate Nursery and advanced to Outstate Tests.
1981	F_9	Nebraska Intrastate Yield Nursery and Outstate Tests.	Continued in Nebraska tests and entered in Northern Regional Performance Nursery (NRPN), Small Scale Milling and Baking Tests.

Exhibit A--Table 1 (concluded).

Year	Generation	Nursery	Disposition
1982	F_{10}	Nebraska Instrastate Nursery, Outstate Tests, NRPN, breeder seed production.	Continued in Nebraska and regional nurseries. Large Scale Milling & Baking Tests, breeder seed increase for production of foundation seed.
1983	F_{11}	Continued in state and regional tests. Foundation seed production.	PI No. 476975 assigned. Released as Colt to growers on June 15, 1983.

8400087

NEBRASKA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA-LINCOLN
DEPARTMENT OF AGRONOMY

'COLT' HARD RED WINTER WHEAT

History

Colt (PI476975) is an increase of a hard red winter wheat F_3-derived line from the 1972 cross 752 of Agate Sib (NE69441)/391-56-D8/Kaw^3(Tx65A1503-1). Tx65A1503-1 is a semidwarf line. Colt was identified as a line in 1978 and tested as NE78696 in Nebraska yield trials beginning in 1979, in the Northern Regional Performance Nursery in 1982 and 1983, and in the Southern Regional Performance Nursery in 1983.

Contributions

Colt originated from cooperative research of the Nebraska Agricultural Experiment Station and the North Central Region, Agricultural Research Service, U.S. Department of Agriculture. The research was supported in part by grants from the Nebraska Wheat Development, Utilization and Marketing Board. J. W. Schmidt, V. A. Johnson (USDA/ARS), P. J. Mattern, and A. F. Dreier of the Department of Agronomy, R. Elmore, P. T. Nordquist, P. H. Grabouski, L. A. Nelson and C. R. Fenster of the outstate stations identified the agronomic and quality characteristics of this cultivar. D. V. McVey and J. H. Hatchett (USDA/ARS) evaluated this cultivar for rust and Hessian fly reaction, respectively. K. F. Finney (USDA/ARS) and A. B. Ward, Kansas State University, assisted in the quality evaluation.

Recommendation

Colt has performed well throughout Nebraska but its midseason maturity is later than desired for southeastern Nebraska.

Description

Colt is an awned, white glumed, semidwarf cultivar similar in height to Vona and six inches shorter than Centurk 78. It is slightly later than Centurk 78 in maturity. It is superior to Vona in winterhardiness, bushel weight, kernel weight and protein content. They have been similar in grain yield and lodging resistance.

During the testing period Colt has been intermediate in field reaction to mildew, soilborne mosaic and stem rust. It has been susceptible to wheat streak mosaic virus. It has had low leaf rust readings. It has been intermediate in reaction to the Great Plains Hessian fly biotype.

The bread baking properties of Colt are similar to those of Scout 66 with mellow dough characteristics as measured by the mixograph. It has been similar to Scout 66 in milling yield and grain protein content.

8400087

Seed Availability

Foundation seed of Colt is being produced in 1983 by the Nebraska Foundation Seed Division and should be available to eligible certified seed growers after the 1983 harvest.

Seed Classes

Seed classes of Colt designated by the Nebraska Agricultural Experiment Station will be breeder, foundation, registered and certified. Colt will be submitted for registration and plant variety protection under P.L. 91-577 with the certification option.

Cultivar Release Information

Informational publicity pertaining to the Colt cultivar may be released on June 15, 1983.

Approval:

Head, Department of Agronomy _____ (date)

Head, Department of Entomology _____ (date)

Head, Department of Plant Pathology _____ (date)

Director, Nebraska Agricultural Experiment Station _____ (date)

8400087

NEBRASKA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA-LINCOLN
LINCOLN, NEBRASKA

and

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NORTH CENTRAL REGION
WASHINGTON, DC

RELEASE OF 'COLT' (P.I. 476975) HARD RED WINTER WHEAT

The Nebraska Agricultural Experiment Station and the North Central Region, Agricultural Research Service, U.S. Department of Agriculture agree to release a new hard red winter wheat cultivar to certified seed growers. P.I. 476975, known also as NE78696, will be released as 'Colt'. It was developed cooperatively by the Nebraska Agricultural Experiment Station and the North Central Region, Agricultural Research Service, U.S. Department of Agriculture. The development was supported in part by grants from the Nebraska Wheat Development, Utilization and Marketing Board.

Colt is an increase of a hard red winter wheat F_3-derived line from the 1972 cross 752 of Agate Sib (NE69441)//391-56-D8/Kaw (Tx65A1503-1). Tx65A1503-1 is a semidwarf line. Colt was identified as a line in 1978 and increased and tested as NE78696 in Nebraska yield trials beginning in 1979, in the Northern Regional Performance Nursery in 1982 and 1983, and in the Southern Regional Performance Nursery in 1983.

Colt is an awned, white-glumed, long-beaked, semidwarf cultivar similar in height to Vona or about six inches shorter than Centurk 78. It is slightly later than Centurk 78 in maturity. It is superior to Vona in winterhardiness, bushel weight, kernel weight and grain protein content. They have been similar in grain yield and lodging resistance.

During the testing period, Colt has been intermediate in field reaction to mildew, soilborne mosaic virus and stem rust, and intermediate in reaction to the Great Plains Hessian fly biotype in greenhouse tests. It has had low leaf rust readings. Colt is susceptible to wheat streak mosiac virus.

The bread baking properties of Colt are similar to those of Scout 66 with mellow dough characteristics as measured by the mixograph but variable to lower in bake water absorption. It has been similar to Scout 66 in milling yield and grain protein content.

Breeder seed of Colt will be maintained by the Nebraska Agricultural Experiment Station. Foundation Seed will be available from the Foundation Seed Division, Department of Agronomy, University of Nebraska-Lincoln, Lincoln, NE 68583.

The U.S. Department of Agriculture will not have seed for distribution.

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Colt will be submitted for registration and variety protection under P.L. 91-577 with the certification option.

The proposed release date is June 15, 1983. Each agency involved in this agreement may make news releases it considers appropriate on or after the release date.

Director, Nebraska Agricultural Experiment Station
Lincoln, Nebraska

4/18/83
(date)

Administrator, Agricultural Research Service
U.S. Department of Agriculture, Washington, DC

5/3/83
(date)

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EXHIBIT B

Novelty Statement for Colt

The Colt cultivar is a hard red winter wheat of the semidwarf (reduced height) type. It is similar to the Vona cultivar in plant height and coleoptile length but differs from it in maturity and winterhardiness. Its most distinguishing feature is a very long beak.

Characteristics of Colt are:

1. Awned, very long beaked, yellow colored (at maturity) hard red winter wheat.

2. Plant height similar to Vona and much shorter than Scout 66 (20 cm shorter).

3. Coleoptile length similar to that of the semidwarf cultivar Vona. In comparative tests, Vona 31.1 mm, Colt 31.8 mm.

4. Lodging resistance similar to that of Vona (5 Nebraska tests in 1983, Vona 19% lodged, Colt 9%).

5. Colt is moderately resistant to leaf rust, stem rust (has SR genes 6, 17, Triumph), mildew and soilborne mosiac. It is susceptible to wheat streak mosaic virus.

6. Colt is medium to medium-late in maturity or similar to Centurk 78.

7. Colt has the Marquillo type of Hessian fly resistance effective against the Great Plains strain.

8. Dough handling characteristics are similar to those of Scout 66 (mellow gluten type).

9. Kernel weight is slightly less than that of Scout 66 (2-year average in Nebraska tests: Scout 66, 34 grams per 1000 kernels, Colt, 33 grams per 1000 kernels).

Additional data are presented in Exhibit D, Table 2.

WHEAT PLANT VARIETY PROTECTION
APPLICATION NO. 8400087 'COLT'
Addenda
(Requested February 26, 1986)

Add to Exhibit B for 'Colt':

Comparisons of Colt with 'Vona' to which it is most similar. Data from Nebraska Outstate Tests, 1981-85.

	Vona	Colt
Plant height, inches (57 tests)	31.5	31.7
Bushel weight, lbs. (44 tests)	58.7	59.9
1000 kernel wt. grams (57 tests)	29.3	31.5
Grain protein, % (57 tests)	11.3	11.9
Lodging, % (23 tests)	8.9	2.8

Date headed: in 11 tests, Colt averaged 2 days later than Vona.

Hessian fly reaction (same source of resistance)	Res.	Res.
Stem rust reaction (different sources of resistance)	Res.	Res.
Leaf rust reaction	Susc.	Susc.

The two most striking differences are in date of heading (maturity) where Colt averages 2 days later and in beak length where Colt has a length of 13-14 mm compared to a length 4-7 mm for Vona.

WHEAT PLANT VARIETY PROTECTION
APPLICATION No. 8400087 'COLT'

Addenda

Exhibit A:

The 'Colt' cultivar is commercially acceptable and stable in that the cultivar can be maintained through seed certification procedures. The Nebraska Crop Improvement Association inspections report the following offtypes in certified seed fields:

A. Two different tall types present as 1/1000 heads total.
1) The most common tall type is typical of the Colt cultivar (very long beaks).
2) A tall type with shorter beak length. In Exhibit A of the original application Colt was described as having a tall plant present in an amount considerably less than 1 percent. The above statements clarify that statement as a description of the cultivar.

B. A red-chaffed offtype in amounts less than 1 in 1000.

These numbers are being reduced through rogueing and a limited generation system (only one year of certification allowed) that will reduce the percentage of offtypes.

Exhibit B:

Colt is a hard, red, winterhardy, winter wheat cultivar. It has usually been compared with "Vona" because of similarity in height -- both are true semidwarfs. Colt differs from Vona sharply -- beak length 4 - 7 mm long for Vona (Registration of Vona Wheat Reg. No. 599, Crop Sci. 18:695) versus 13-14 mm for Colt. They also differ in stem rust genes in that Colt has the Triumph gene SR Tmp and Vona has SR11. Both of these can be distinguished in seedling stem rust tests. Colt differs in beak length from 'HiPlains' (9.5 mm as reported in PVP Application) and 'Buckskin' (9.1 mm as reported in PVP application), versus 13-14 mm for Colt and differs from both in plant height. HiPlains and Buckskin are conventional height (tall) cultivars while Colt is a short semidwarf. It differs from Agripro Wrangler (a medium-length beak cultivar) sharply in maturity. At the University of Nebraska Field Laboratory at Mead, NE, Wrangler flowered in 1985 on May 18 and Colt on May 26. 'Bighorn' is a long-beaked cultivar similar to Colt in beak length and plant height but it is very late in flowering [In 1982, Bighorn was 5 days later in flowering than Colt in the Northern Regional Performance Nursery (14 locations in the Northern Great Plains) and in the 1983 nursery at 16 sites the difference in flowering date was four days.]

Quality Data (Colt)

Representative data for grain protein content (Nebraska Outstate Tests) and milling and baking quality data provided by the Hard Winter Wheat Quality Laboratory, U.S. Grain Marketing Research Laboratory, Manhattan, Kansas show Colt as being satisfactory (mellow gluten) hard red winter wheat milling and baking quality.

Grain Protein Content of Selected Cultivars from Nebraska Out-State Tests

Cultivar	Grain Protein Content (%) - - - - - - - Years and No. of Tests - - - - - - -			
	1981 (13 tests)	1982 (13 tests)	1983 (12 tests)	1984 (10 tests)
Scout 66	12.0	12.1	12.1	12.0
Brule	11.0	10.9	11.0	11.2
Buckskin	11.5	--	11.7	11.8
Centurk 78	11.4	11.8	12.0	11.7
Centura	11.8	12.1	11.8	12.2
Colt	12.0	11.9	--	11.8
Siouxland	--	11.4	12.4	11.8

Table I. Chemical, Milling, and Bread-Making Data for the Northern Regional Performance Nursery Composites of Hard Winter Wheat Varieties Harvested in New Mexico, Nebraska, Minnesota, and South Dakota in 1982. 1/ 2/

Variety	C.I. or Sel. No.	Wheat				Flour			Bake Mix Time 3/		Loaf Volume	
		Wt. Per Bu.	Ash	Protein	Flour Yield	Ash	Protein	Absorption	As Rec'd	12.0% Protein Basis	As Rec'd	11.5% Protein Basis
		lbs	%	%	%	%	%	%	min	min	cc	cc
Kharkof	1442	60.0	1.64	13.4	73.7	0.41	12.2	57.3	3 5/8	–	975	924
Warrior	13190	60.7	1.49	12.3	76.5	.40	11.3	57.5	3 1/2	3 1/4	922	937
Roughrider	17439	60.2	1.58	13.8	75.7	.45	12.7	58.4	3 1/8	–	1015	927
Centurk*2/Hand	SD74221	60.6	1.55	13.1	75.4	.41	11.9	58.8	4 3/4 Q	–	955	926
" "	SD74209	60.0	1.53	12.2	73.3	.40	11.2	60.2	5 1/8	4 5/8	913	935
Centurk*5/Hand	SD76705	59.4	1.61	13.2	73.5	.42	11.9	59.6	4 3/8	–	960	930
Agent/*4Sut*2//Hand	SD75284	60.1	1.45	12.9	75.6	.38	12.0	60.1	4	–	960	923
CI15322//Agent/4*Sut/3/Ctk	SD76598	60.9	1.56	12.9	74.9	.42	11.6	57.5	4 5/8	4 3/8	908	901
" " " "	SD76602	60.4	1.50	12.8	75.1	.41	11.9	57.5	2 7/8	–	895	868
Centurk*3/Hand	SD75244-2	59.8	1.54	12.5	74.7	.43	11.5	58.8	5 1/4	4 7/8 Q	920	920
Centurk*4/Hand	SD75115-3	59.1	1.55	12.7	75.2	.43	11.6	57.9	5	4 3/4 Q	928	921
Centurk*5/Hand	SD76694	59.0	1.58	13.2	74.5	.41	11.9	59.2	4 1/4	–	953	924
Wrr*5/Agent//Ctk78	NE77465	60.5	1.47	12.2	76.6	.39	11.1	57.0	5 1/2	4 7/8 Q	903	933
" " "	NE78659	59.8	1.47	12.1	77.1	.39	11.1	58.2	4 7/8	4 3/8	899	929
Wrr*5/Agent//Agate Sib	NE76667	60.5	1.55	12.6	75.2	.41	11.4	57.8	4 1/2	4 1/8	915	922
Sentinel/Centurk	NE78414	60.1	1.53	13.0	74.0	.37	11.9	61.5	5 Q	–	985	954
" "	NE78415	59.3	1.55	13.1	76.4	.40	11.8	59.5	4	3 7/8	953	931
Agate Sib (NE69441)/TX65A1503-1 Colt	NE78696	60.6	1.58	12.7	75.2	.39	11.9	56.4	3 1/4	–	955	926
" " "	NE78698	59.9	1.58	12.8	74.0	.40	11.9	57.7	3 3/4	–	927	899
Pau 45/Cheyenne	WT166	60.3	1.47	12.8	75.4	.38	11.8	57.6	3 7/8	3 3/4	928	907
Wrr/III-54-12//Sdy/3/Wnk/Ark	NK78W296	60.2	1.64	12.5	77.2	.49	11.8	55.2	4 1/4	4 1/8	924	903

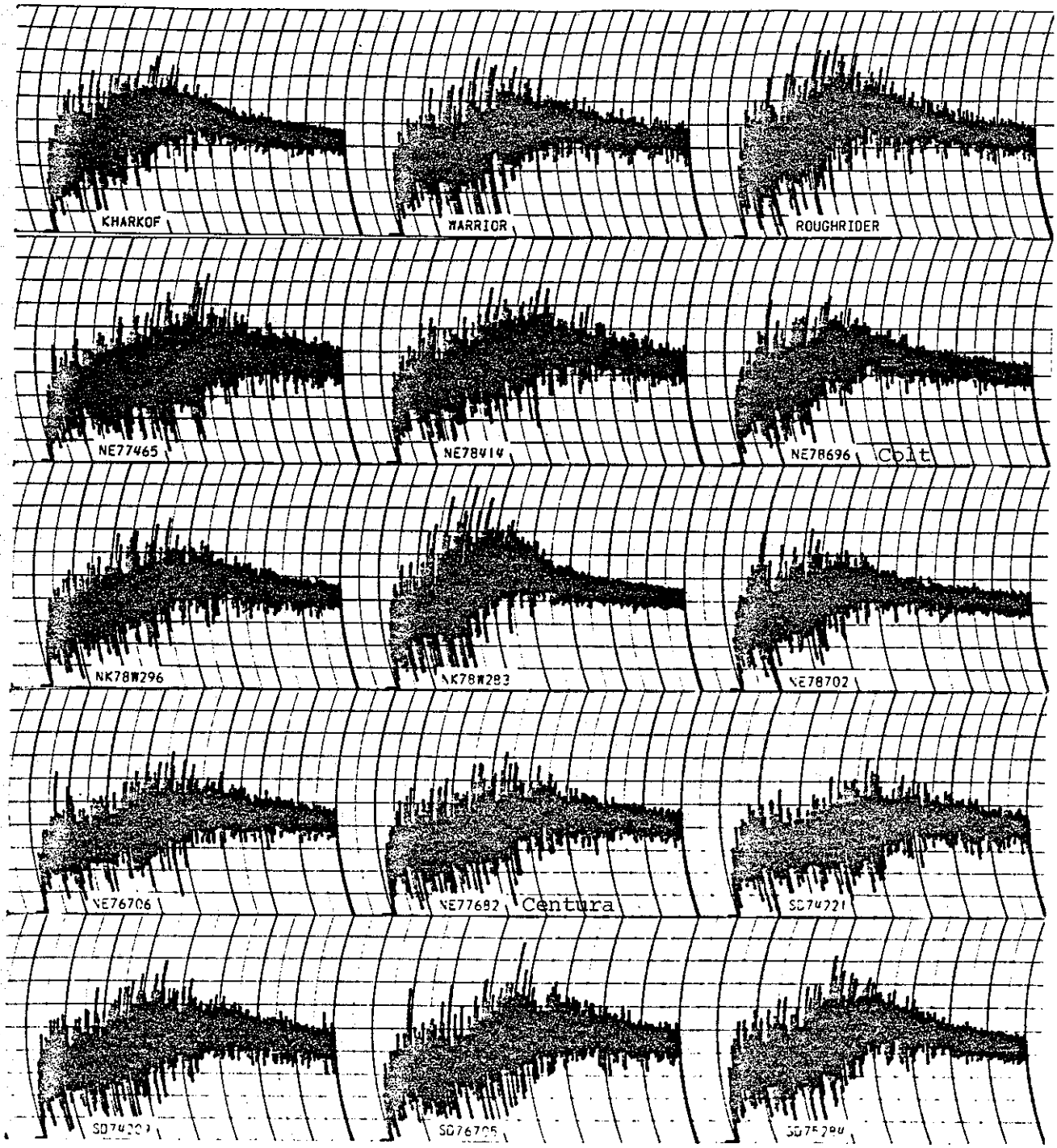

Fig. 1. Mixograms (10 g of flour) for the Northern Regional Performance Nursery composites of hard winter wheat varieties harvested in Idaho, Minnesota, Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming in 1983. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

Table 1. Chemical, Milling, and Bread-Making Data for the Northern Regional Performance Nursery Composites of Hard Winter Wheat Varieties Harvested in Idaho, Minnesota, Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming in 1983. 1/

Variety	C.I. or Sel. No.	Wheat				Flour			Dough Mix Time 2/		Loaf Volume	
		Wt. Per Bu.	Ash	Protein	Flour Yield	Ash	Protein	Absorption	As Rec'd	Corrected to 12.0% Protein	As Rec'd	Corrected to 12.0% Protein
		lbs	%	%	%	%	%	%	min	min	cc	cc
Kharkof	1442	58.3	1.67	13.1	71.7	0.40	12.1	56.3	3⅜	-	940	933
Warrior	13190	59.1	1.54	12.6	73.0	.40	11.7	56.8	4⅛	4	938	960
Roughrider	17439	59.4	1.63	13.7	72.3	.45	12.6	57.0	3¼	-	993	950
Wrr*5/Agent/2/Ctk 78	NE77465	59.4	1.54	12.8	73.3	.40	11.6	56.2	5⅛	4⅞	918	947
Sentinel/Centurk	NE78414	59.7	1.60	13.7	71.9	.38	12.6	59.7	4¾	-	984	941
Agate sib (NE69441) /TX65A1503-1 Colt	NE78696	59.5	1.65	12.8	74.3	.41	12.0	55.2	3½	-	976	976
Wrr/III-54-12/2 /Sdy/3/Wnk/Ark	NK78W296	59.8	1.61	12.5	75.6	.47	11.5	54.8	4	3¾	935	972
NB68639/2/Wrr/III-54-12/3/Wnk/CI14059	NK78W283	58.5	1.62	13.2	74.1	.45	12.5	57.1	3⅜	-	960	925
Agate sib(NE69441) /TX65A1503-1	NE78702	59.7	1.62	12.6	74.0	.40	11.7	54.8	3¼	3⅛	943	965
Bezostaya 1/2*Ctk 78	NE76706	59.7	1.53	12.8	74.2	.44	11.9	56.7	4½	4½	945	952
Wrr*5/Agent/2/NE68457 /3/Ctk 78 Centura	NE77682	59.6	1.53	12.8	74.8	.43	11.8	57.2	4⅜	4¼	928	942
Centurk*2/Hand	SD74221	59.6	1.62	13.1	74.0	.43	11.8	56.9	4⅞	4¾	953	968
Centurk*2/Hand	SD74209	60.3	1.61	12.6	72.6	.41	11.5	58.1	3¾	3½	923	960
Centurk*5/Hand	SD76705	59.5	1.62	13.2	72.2	.42	12.0	58.1	4¼	-	965	965
Agent*4Sut*2/2/Hand	SD75284	59.2	1.56	13.0	73.6	.42	12.0	58.2	3¾	-	962	962
CI15322/2/Agent /4*Sut/3/Ctk	SD76598	60.0	1.58	12.7	75.6	.46	11.6	56.9	4½	4¼	912	940
Centurk*5/Hand	SD76694	59.6	1.59	13.0	74.7	.45	12.0	58.1	3⅞	-	968	968
Sage/SD75375	SD79613	59.8	1.63	12.9	74.4	.42	11.8	57.7	3⅝	3½	944	959

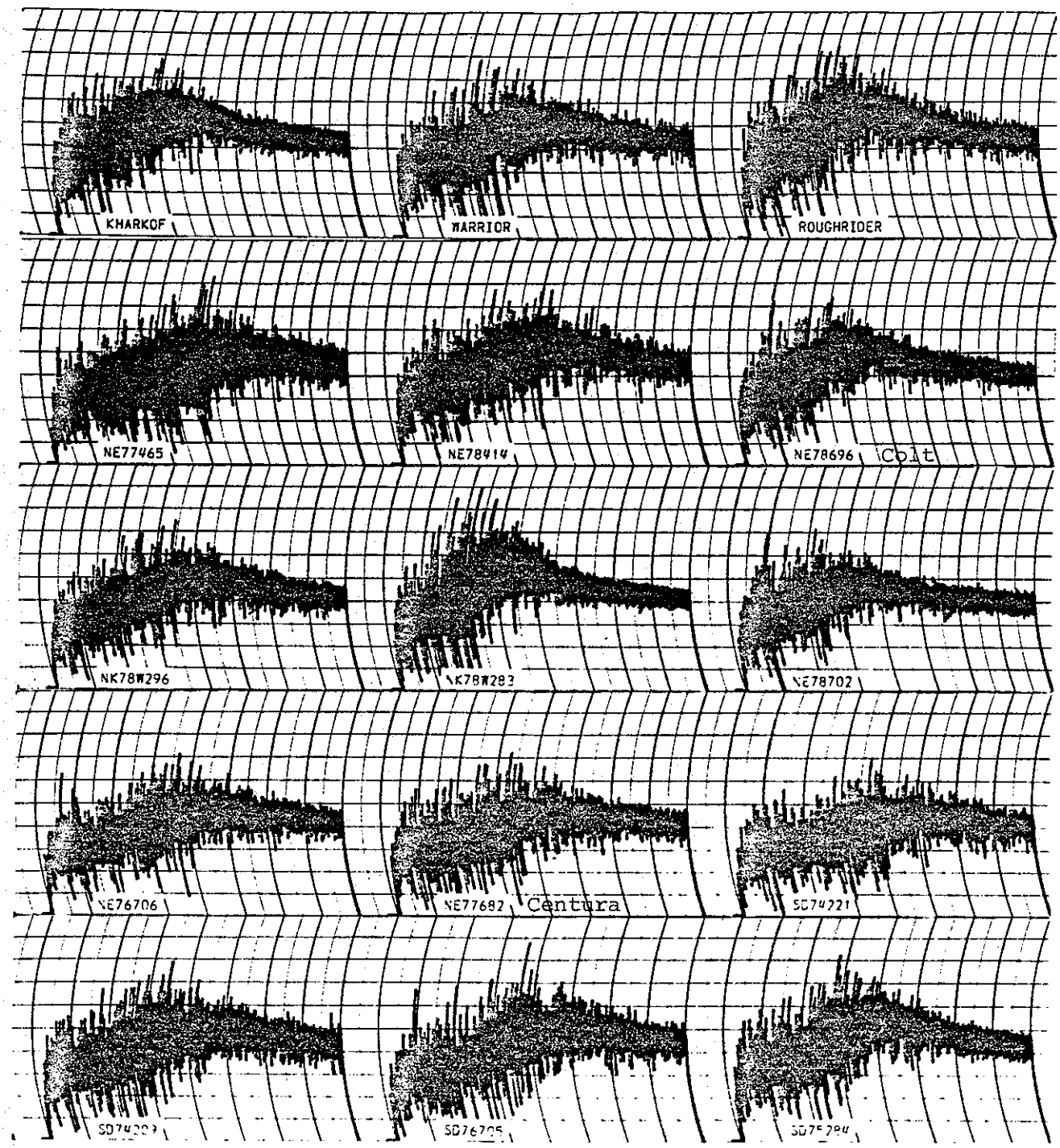

Fig. 1. Mixograms (10 g of flour) for the Northern Regional Performance Nursery composites of hard winter wheat varieties harvested in Idaho, Minnesota, Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming in 1983. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

Table I. Chemical, Milling, and Bread-making Data for the Northern Regional Performance Nursery Composites of Hard Winter Wheats Harvested in Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming in 1984. 1/ 2/

Variety	C.I. or Sel. No.	Wheat				Flour					Loaf Volume
		Wt. Per Bu.	Ash	Protein	Flour Yield	Ash	Protein	Absorption 3/	Dough Mix Time 4/	Bread Crumb Grain	Corrected to 11.5% Protein
		lbs	%	%	%	%	%	%	min		cc
Kharkof	1442	60.1	1.61	13.1	73.4	0.42	12.1	55.6	3⅛	S	951
Warrior	13190	60.5	1.57	12.7	74.6	.40	11.6	55.8	3½	S	950
Colt	NE78696	60.9	1.73	13.1	73.1	.39	11.9	53.7	3½	S	912
Lovrin/3/2*Ctk 78	NE80413	60.0	1.63	12.0	72.5	.42	10.7	58.3	3¼	Q-S	924
Sage/SD75375	SD79613	60.3	1.65	12.8	73.0	.39	11.5	57.5	3⅝	S	932
SD75375/OK7112481	SD791112	60.9	1.62	13.0	73.7	.41	11.7	58.1	4⅜	S	955
CO695625/Ctk	CO745775-4	60.5	1.66	12.5	72.5	.40	11.2	57.5	3⅞	S	918
Sage/Hand/2/Bennett	SD79560	61.2	1.70	13.7	74.7	.40	12.8	55.2	3⅛	S	917
Sage*2/Hand	SD791041	61.4	1.62	13.9	74.8	.40	12.8	54.7	3½	S	907
Sage/Hand/2/Bennett	SD791058	61.5	1.61	13.2	74.4	.41	11.8	57.8	4¼	S	961
CI15322/2/Agent/4*Sut/ 3/Ctk/4/SD75375	SD82163	60.8	1.60	12.2	72.5	.40	10.9	60.1	5⅛	Q-S	961
Amigo/2*Ctk 78/2/Rose	SD82119	61.2	1.57	11.9	71.0	.43	10.7	64.7	5⅛	Q-S	980
Sage*2/Hand	SD79391	61.4	1.62	13.9	74.0	.39	12.8	57.9	3½	S	942
Pau 45/Cheyenne	WT166	59.9	1.60	12.2	71.1	.35	11.0	60.3	4⅛	Q-S	935
Froid/Wnk/2/MT6	MT7811	60.6	1.61	12.2	73.7	.40	11.0	58.4	3⅝	Q-S	933
NE70137/TX65A1503	MT7877	60.1	1.55	12.3	75.9	.40	11.4	57.8	4	Q-S	964
Redwin Sel.	MT8003	60.7	1.53	12.5	74.4	.36	11.6	57.4	4⅛	S	953
Winridge	17902	58.4	1.55	11.6	74.0	.40	10.5	56.5	2⅛ U	Q	1016
Winter Wheat Hybrid	RH830201	60.8	1.55	12.7	74.6	.38	11.4	56.3	3¼	S	967
" " "	RH830301	61.3	1.52	12.7	72.3	.36	11.2	58.0	3⅜	S	962
YTO-117/Trader	ND7687	61.4	1.58	13.2	74.5	.41	11.9	56.1	2½ U	S	935

Table I. (Continued)

Variety	C.I. or Sel. No.	Wheat				Flour					Loaf Volume
		Wt. Per Bu.	Ash	Protein	Flour Yield	Ash	Protein	Absorption[3]	Dough Mix Time[4]	Bread Crumb Grain	Corrected to 11.5% Protein
		lbs	%	%	%	%	%	%	min		cc
Winter Wheat Hybrid	XH170A	60.4	1.62	11.9	73.4	0.42	10.8	59.4	3⅜	S	968
" " "	XH172	59.1	1.61	11.9	72.6	.43	10.8	58.7	4	Q-S	937
" " "	XNH1150	60.2	1.73	11.7	70.4	.41	10.8	59.3	4⅛	S	953
" " "	XNH1246	61.0	1.62	11.9	72.2	.42	10.8	59.9	3⅜	S	977
" " "	XNH1247	59.7	1.65	12.5	73.4	.42	11.2	58.6	3¼	S	988
(Warrior*5/Agent) *2/Kavkaz Siouxland	NE78668	60.9	1.55	12.6	74.6	.40	11.5	59.0	3½	S	925

1/ Data expressed on a 14% moisture basis.

2/ S, Q, and U = Satisfactory, questionable, and unsatisfactory quality with respect to property in question. A satisfactory rating is inferred in the absence of a designated one. One unsatisfactory rating characterizes a variety as undesirable for hard winter wheat milling and breadmaking purposes.

3/ Bake absorption corrected to 12% protein, assuming that bake absorption at 0.0% protein is 42%.

4/ Mixing time used in baking is evaluated in conjunction with other properties obtained from the 10-g mixogram. Mixing time for samples having less than 12% protein have been corrected to 12% protein.

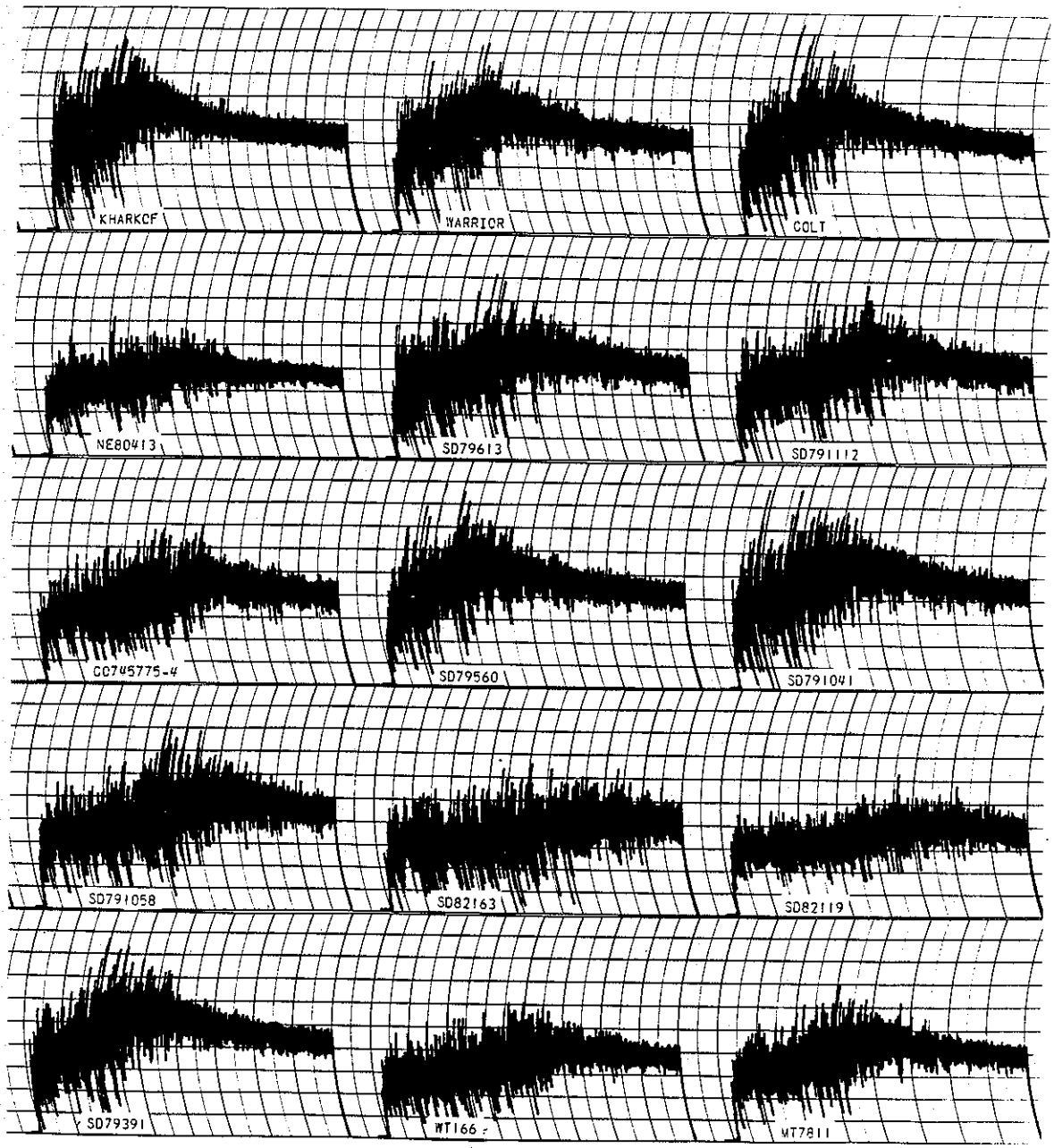

Fig. 1. Mixograms (10 g of flour) for the Northern Regional Performance Nursery composites of hard winter wheat varieties harvested in Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming in 1984. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

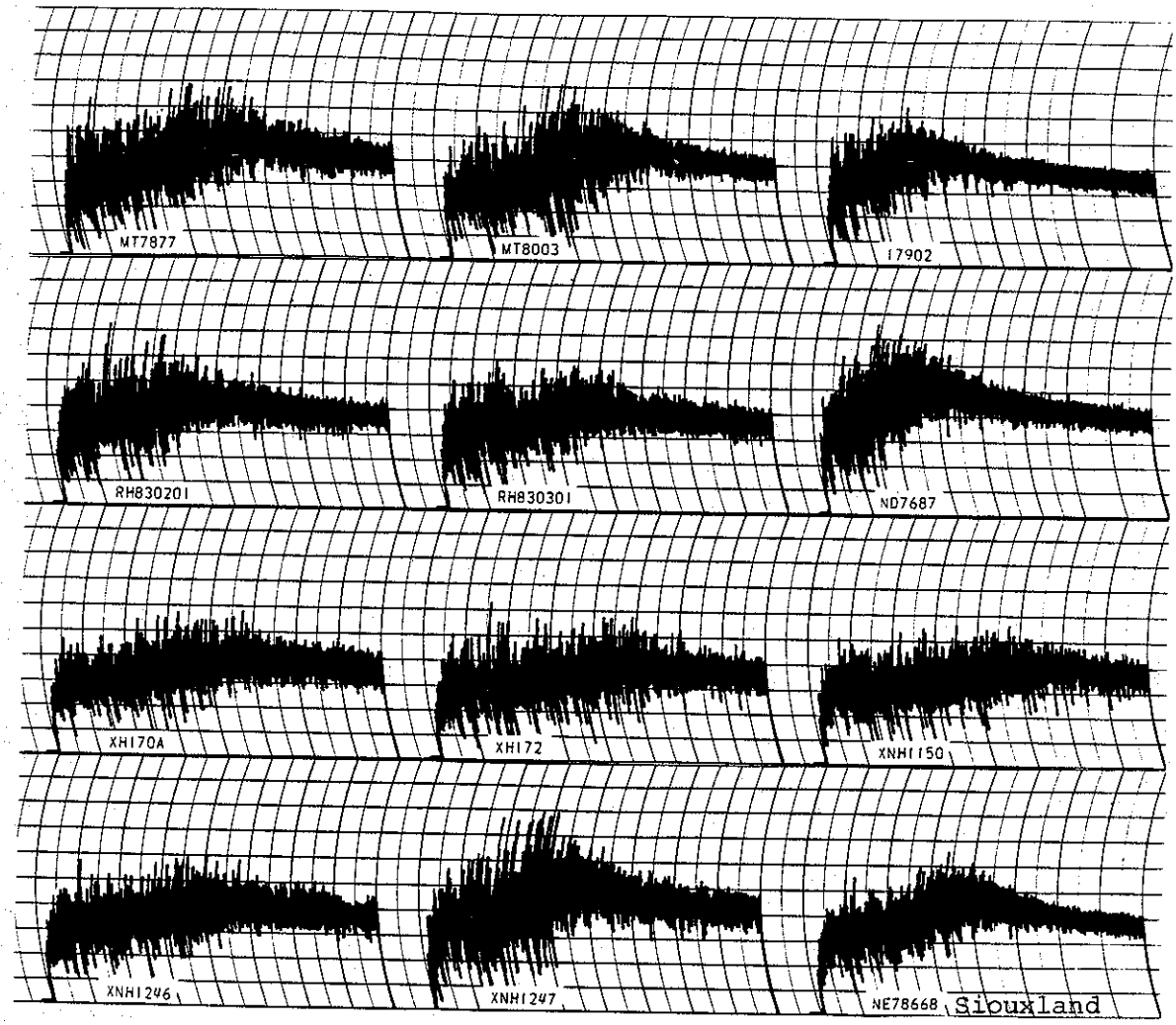

Fig. 2. Mixograms (10 g of flour) for the Northern Regional Performance Nursery composites of hard winter wheat varieties harvested in Montana, Nebraska, New Mexico, North Dakota, South Dakota, and Wyoming in 1984. Mixing time is the time (min) to the peak (point of minimum mobility). Mixing tolerance is the slope and width after the peak and stability of mixogram height on either side of the peak. Major arcs are at 1-min intervals.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S): Board of Regents, Univ. of Nebraska
Agricultural Research Service/USDA

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Lincoln, Nebraska 68508
Washington, DC 20250

FOR OFFICIAL USE ONLY

PVPO NUMBER: 8400087

VARIETY NAME OR TEMPORARY DESIGNATION: Colt

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____ [2] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[ ][ ][ ] FIRST FLOWERING meaningless in winter wheat [ ][ ][ ] LAST FLOWERING

4. MATURITY (*50% Flowering*):

[ ][ ] NO. OF DAYS *EARLIER* THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[ ][2] NO. OF DAYS *LATER* THAN ..... [2] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (*From soil level to top of head*):

[ ][8][0] CM. HIGH * regional data: 80 cm and 20 cm shorter than Scout.
Nebraska (1983 Mead): 99 cm and 23 cm shorter than Scout.

[ ][ ] CM. TALLER THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[2][0] CM. SHORTER THAN ..... [2] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):

[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][5] NO. OF NODES (*Originating from node above ground*)

[2][0] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW (based on Nebraska data)

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____

[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][0] MM. LEAF WIDTH (*First leaf below flag leaf*)

[2][4] CM. LEAF LENGTH (*First leaf below flag leaf*):

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11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3 = middense

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): actually white to yellow

[0][7] CM. LENGTH [1][0] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[4] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE — square to rounded

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE — very long (14 mm)

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[1] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[3] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[ ] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[0][6] MM. LENGTH — actual 6.4

[0][3] MM. WIDTH — actual 2.7

[3][0] GM. PER 1000 SEEDS

17. SEED CREASE: 4 = similar to Scout

[4] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[4] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI' — 4 = similar to Scout

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3 = moderately resistant

[3] STEM RUST (Races) _____ [3] LEAF RUST (Races) _____ [0] STRIPE RUST (Races) _____ [0] LOOSE SMUT

[3] POWDERY MILDEW [0] BUNT [ ] OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY [0] APHID (Bydv.) [0] GREEN BUG [0] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____ HESSIAN FLY RACES: [2] GP [0] A [0] B [0] C [0] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Vona	Seed size	larger than Vona
Leaf size	Vona	Seed shape	Vona
Leaf color	Vona	Coleoptile elongation	Vona
Leaf carriage	Vona	Seedling pigmentation	Vona

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

Description of Colt

Glumes of Colt are glabrous and have narrow, square to rounded shoulders. Kernels are red, elliptical with a medium-large germ, a medium length brush, not collared, rounded cheeks, with a narrow crease similar in depth to that of Scout 66.

Table 2. Spike and kernel measurements for Scout 66 and Colt.

	Spike length (cm)	Spike width (mm)	Awn length (cm)	Beak length (mm)	Glume length (mm)	Glume width (mm)	Kernel length (mm)	Kernel width (mm)	1000-KW (grams)
Scout 66	7.1	8.1	6.2	2.2	7.9	3.7	6.5	2.7	34
Colt	6.7	9.7	7.9	13.8	8.5	3.4	6.4	2.7	33

SEEDLING REACTION OF THE 1982 NORTHERN REGIONAL PERFORMANCE NURSERY TO PUCCINIA GRAMINIS TRITICI (BY D. V. McVEY, USDA, CEREAL RUST LABORATORY, UNIVERSITY OF MINNESOTA, ST. PAUL, MN.)

Entry No.	Variety or Sel. No.	72-4-1A	74-21-1409A	72-00-1370C	72-44-703C	71-21-584B	72-25-639C	72-18-630B	72-14-504C
		15B-2		151		11-32-113			
		TNMH	TNMK	QFBS	QSHS	RHRS	RKQS	RSHS	RPQQ
1.	Kharkof	S	S	S	S,2	S	S	S,2	S
2.	Warrior	S	S	S	S	S	S	S	S
3.	Roughrider	-	S	0;-1	0	S	S	0	S
4.	SD 74221	S,0;	0;	2	0;	2-,S	S	0;S	0;S
5.	SD 74209	0;	0;,S	0;	2	2	S	2	0;
6.	SD 76705	-	0;	-	0	-	S-	-	0;
7.	SD 75284	0;-1N	S	2	2,S	2	S	2,S	0;-1N
8.	SD 76598	0;	0;	0;	2-	2-	2=,S	2=	0;
9.	SD 76602	0;-1	0;,S	S,0;	2,S	S	S	2-,S	0;-1N
10	SD 75244-2	0;	0;,2	0;,2	2	2,S	S	2-	0;
11.	SD 75115-3	0;	0;	0;	0	2	S	0,S	0;
12.	SD 76694	0;	0;	0;	0	2	2	0	0;
13.	NE 77465	0;	0;	0;	S	2	2	2,S	0;
14.	NE 78659	0;	0;	0;	2	2	2	2	0;
15.	NE 76667	0;	0;	0;	2-	2-	2-	2-	0;
16,	NE 78414	0;	0;	0;	23	S	23CN	23	0;
17.	NE 78415	0;	0;	0;	S	S	23CN	S	0;
18.	NE 78696 (COLT)	-	0;	-	2-	-	2	-	0;
19.	NE 78698	0;	0;	0;	2-	2	2	2-	0;
20.	WT 166(no Seed)	-	-	-	-	-	-	-	-
21.	NK 78W296	-	S	-	0;	-	S	-	S
22.	NK 78W283	0;-1	S	S	S	S	S	S	0;
23.	NA 201	-	0;	-	23	-	S	-	0;
24.	MT 7428	S	S	S	S	S	S	S	S
25.	MT 77062	-	S	-	S	-	S	-	S
26.	MT 77063	S	S	S	S	S	S	S	S
27.	MT 7811(no seed)	-	-	-	-	-	-	-	-

EXHIBIT E

Statement of the Basis of Applicant's Ownership

Colt hard red winter wheat is a product of the cooperative state-federal wheat breeding program located in the Nebraska Agricultural Experiment Station. The breeders of Colt were Dr. John W. Schmidt and Dr. Virgil A. Johnson, employees of the Nebraska AES (Department of Agronomy) and the Agricultural Research Service-USDA (stationed and functioning also as a staff member of the Department of Agronomy), respectively.

By established policy, release of cultivars by the Nebraska Agricultural Experiment Station is the responsibility of the Nebraska AES as the agency providing staff, funds, and facilities for the breeding program.

United States Department of Agriculture
Agricultural Marketing Service
Warehouse and Seed Division
National Agricultural Library Building
Beltsville, MD. 20705

April 24, 1984

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No. 8400087
Variety and Kind: 'Colt' Wheat

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on the Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived, except that this waiver shall not apply to breeders seed, foundation seed, labeling requirements, and blending limitations.

It has been agreed that the Certificate should be issued in the name(s) of:

The Board of Regents, The University of Nebraska

July 2, 1984
(Date)

John W. Goebel
(Signature) by Kim Aufr Asst to Vice Chan

by
John W. Goebel, Vice Chancellor for Business & Finance
The University of Nebraska - Lincoln